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Postharvest Handling
Technical Bulletin

CASSAVA

Postharvest Care and Market Preparation

Technical Bulletin No. 21

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POSTHARVEST HANDLING TECHNICAL SERIES

CASSAVA

Postharvest Care and Market Preparation

Ministry of Fisheries, Crops and Livestock
New Guyana Marketing Corporation
National Agricultural Research Institute

Technical Bulletin No. 21

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Preface

This publication is part of a series of technical bulletins that seek to provide specific recommendations for improvements in postharvest care and market preparation for selected non-traditional agricultural products. The intended audience for this series is primarily extension agents.

Initial market assessments in current export markets and visits with producers and exporters in Guyana have shown the quality of fresh produce currently exported is uneven and in some instances very poor. Stages all along the export chain from harvest and pre-harvest to transportation and final export are all in need of improvement. Pre-harvest practices, sanitation at the packinghouse, packaging, bacterial and fungal problems, and transportation were all identified as areas where improvement could benefit the quality and increase the shelf life of Guyana's fresh produce exports. The technical bulletins address these issues specific to each product. Harvesting techniques and crop maturity indices are provided. Preparation for market, including cleaning, sorting, packing and transportation are covered. The bulletins address and recommend specific storage conditions, covering temperature and humidity controls. Finally the bulletins address postharvest diseases and insect damage.

The undertaking of these technical bulletins is a joint effort of the Ministry of Fisheries, Crops and Livestock; the New Guyana Marketing Corporation (NGMC) and the National Agricultural Research Institute (NARI) to improve quality, increase production and promote exports. As a team, the three agencies are working on the problems, limitations, and constraints identified in the initial reconnaissance surveys, from production and post harvest handling problems, to packaging and transportation, to final market.

Introduction

Cassava is one of the principal ground provisions grown in Guyana and is a rich source of carbohydrate. However, cassava is very perishable for a root crop, and has a potential storage life of only a few weeks under ambient temperature conditions. Market life can be significantly extended if the roots are refrigerated. The principal causes of postharvest deterioration are internal root discolouration and microbial spoilage.

Harvest Maturity Indices

Time after planting is a commonly used index for determining when to harvest cassava. Roots are typically sufficiently well-developed beginning 6 to 7 months after planting. Harvest maturity is based on the root size desired by the market. Harvest may be delayed until market, processing, or weather conditions are favourable. However, as the roots age beyond a year, they become woody and fibrous. Several randomly selected plants, representative of the entire field, should be harvested beginning 6 months after planting to determine the average root size.

Foliage senescence and lower leaf yellowing can also be used as an indication of harvest maturity. When the lower foliage is distinctly yellow and some leaves have dried up, it is likely the plants are mature enough for the roots to be harvested.

Harvest Methods

Figure 1. A short section of the stem is used to lift cassava roots out of the ground.

Harvesting cassava roots is usually done by hand and is easier when the soil is moist. Harvesting is also easier if planting is on ridges or in beds and in loose or sandy soils, rather than on flat ground and in clay or heavy soils. To facilitate lifting of the roots out of the ground, the main stem of the plant is usually cut back to a height of 30 cm to 50 cm (12 in to 20 in). The stem is used as a handle to lift the roots out of the ground (Figure 1). In light soils, the roots are slowly drawn from the soil by pulling the stems or with the help of a kind of crowbar. In heavier soils or during the dry season, harvesting usually requires digging around the roots to free them prior to lifting the plant. While lifting, care should be taken not to break the roots or split the skin. Wounded tissue is an entry point for decay causing micro-organisms.

During the dry season, the upper parts of the cassava plant should be removed several weeks prior to harvest. Removing the vegetative growth will lengthen the shelf life by several weeks. This may be attributed to partial root curing and skin thickening while still in the soil.

After the roots have been pulled out of the ground, they are removed from the base of the plant by hand. Care must be taken during the harvesting process to minimize damage to the roots. Mechanical damage incurred by the roots during harvest will result in higher amounts of postharvest moisture loss and secondary decay. Cassava roots usually start rotting from the neck, which is the point of attachment of the root to the mother plant. Harvesting the roots with a short section of the stem still attached may prevent spread of decay into the root. Cassava should be graded in the field and any unmarketable, damaged, or diseased tubers should be discarded. Damaged roots are highly susceptible to decay, particularly if the postharvest curing is inadequate.

Loosely adhering soil should be removed from the root surface at the time of harvest. Cotton or soft fabric gloves work well to facilitate field cleaning of the roots.

Figure 2. Cassava roots put in reed field containers often suffer considerable skinning.

The cassava should be gently placed in strong well-ventilated field containers for transport out of the field. Wooden crates or strong plastic containers are much better field containers than sacks or reed baskets (Figure 2), which can cause significant root skinning during transport. The roots should be taken to a shaded area prior to loading on a vehicle for transport out of the field. When locally made containers have sharp edges or rough inner surfaces, an inner liner made from fiberboard or foam can be used to protect the roots from abrasions during handling.

Curing

Roots intended for storage should be properly cured immediately after harvest. Curing improves potential market life by reducing water loss and lowering the incidence of decay during storage. Curing is a process in which the skin thickens and new tissue forms beneath the surface in injured areas of the root. Non-cured cassava will deteriorate faster and lose more weight than properly cured roots. The injured tissue must heal quickly to avoid disease-producing organisms entering the root. The curing process should begin as soon as possible after digging. However, curing will not be effective on roots with extensive damage.

Cassava can be cured outdoors if piled in a partially shaded area (Figure 3). Cut grasses or straw can be used as insulating materials and the pile should be covered with canvas, burlap or woven grass mats. Curing requires high temperature and high relative humidity (RH), and this covering will trap self-generated heat and moisture. The stack should be left undisturbed for about four days.

Cassava can also be cured inside a protected structure at ambient temperature, provided the (RH) is high. Wetting the floor or using a small electric humidifier can obtain a high RH.

The optimal conditions for cassava curing are 26.5°C to 29.3°C (80°F to 85°F) and 90% to 95% RH for 4 days immediately following harvest. The temperature should not exceed 35°C (95°F) nor should the RH be so high (i.e. 100%) that moisture condensation occurs on surface of the cassava roots.

Figure 3. Preparation of an outdoor pile of cassava for curing.

Cassava should never be washed prior to curing and/or storage, as this will likely result in severe decay. The roots should be stored in bins or crates, and washed only prior to packing for market.

Storage

The simplest means of preserving cassava is to delay harvesting and allow the roots to remain in the ground. However, cassava roots will become fibrous and woody with prolonged in-ground storage time and flavour may be impaired. Also, the longer the roots remain in the ground the more risk there is of insect, disease, or rodent attack.

Harvested roots can also be stored in the ground buried in trenches or holes filled with a sand/soil mix at 15% moisture. It is necessary to keep these in-ground storage areas protected from heavy rain. Roots will typically lose about 20% of their original starch content after 2 months stored underground.

Above-ground clamp silos are low-cost structures that generally work well for cassava storage. Roots are piled up on a layer of straw in conical heaps weighing between 300 kg to 500 kg (600 lb to .5 tons). The pile is covered with straw and soil and openings should be left for ventilation. It is possible to store cassava for up to 4 weeks without significant weight loss or decay.

Another method of storing cassava is to place them in wooden crates containing damp sawdust. However, if the sawdust is too moist it promotes fungal growth and if it is too dry the roots deteriorate quickly. Lining the crates with perforated plastic prevents dehydration of the sawdust, resulting in a storage life of about 1 month.

Cassava roots treated with the fungicide thiabendazole can be stored for 3 weeks inside perforated plastic bags at ambient temperatures. Keeping the roots inside plastic bags also reduces the incidence of vascular streaking.

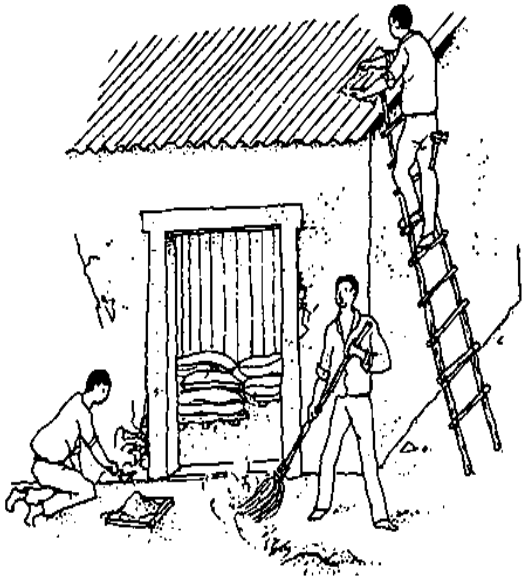

Figure 4. Cleaning and weed removal around cassava storage structure.

Various types of above-ground storage structures can be built for extending cassava postharvest life. The structures should be located in shaded areas free from standing water during heavy rains. A simple storage facility can be constructed from unfinished wooden planks painted white to reduce heat accumulation and covered with a thatched roof for protection against the sun and rain. The structure has a large door on one side for loading and unloading. It is designed for holding between 1 to 2 tons (1000 kg to 2000 kg) of cassava. A brick or concrete floor is recommended for permanent storage buildings and the structure should have a large door for loading and unloading. A tin or shingled roof is ideal, and the structure should have good ventilation (Figure 4). The doors should be secured against rodent entry and theft.

Postharvest Temperature

Refrigerated storage may not be an economical, viable method for extending the postharvest life of domestically marketed cassava, but is typically necessary for roots intended for high-value export markets. Fresh cassava roots are highly perishable at normal air temperatures, often becoming unmarketable after several days to a week. However, with proper handling, cured roots can be stored for at least several months, permitting export by sea container. The recommended temperature for maximizing cassava storage life is 2°C (36°F). Sound roots can be stored for up to 4 to 5 months at this temperature. Cassava is susceptible to chilling injury, but can be stored between 0º C to 5º C (32° F to 41° F) with minimal symptom development.

Relative Humidity

Cassava should be stored at a high RH in order to minimize weight loss and root shrivel. Ideally, the storage atmosphere should be maintained between 90% to 95% RH.

Preparation for Market

Cleaning/Washing

The surface of the cassava should be sufficiently cleaned to meet market expectations. For the domestic Guyanese market, excess soil should be removed from the cassava surface with a soft brush or cotton gloves. Cassava destined for export should be cleaned by carefully submerging the roots in a tank of clean water sanitized with 150 ppm hypochlorous acid (household bleach) and maintained at a pH of 6.5. The water in the tank should be replaced frequently as dirt and debris will quickly accumulate.

Grading/Sorting

Following cleaning, the roots should be graded according to size, shape, and amount of defects. Remove all cut, cracked, diseased and unattractive roots to make the package as attractive as possible. Good quality cassava should be smooth, firm, fairly straight, and uniform in shape and size. In addition, the roots should be free from mechanical damage, decay, and vascular streaking. The pulp should be a uniform white or light yellow, depending on the cultivar. Grades are based on freedom from defects, size, shape and uniformity. Export markets typically prefer large sized roots, between 15 cm to 25 cm in length (6 in to 10 in). Root lengths in excess of 30 cm (12 in) are undesirable to many importers.

Waxing

Dipping the roots in melted paraffin wax at 51.5°C to 52.5°C (125°F to127°F) for one second adds a smooth thick surface coating to the root. This coating helps reduce root moisture loss and extends market life for up to 2 months. It also improves the external appearance of the root and reduces discolouration of the vascular tissue. A wax treatment is highly recommended for export market destined cassava roots. It is essential that the root surface be completely dry prior to the paraffin wax application. After waxing, the roots are typically packed immediately for export. Waxing and holding at 0ºC to 5ºC (32°F to 41°F) can extend shipping time to over several months with minimal occurrence of vascular streaking.

Packaging

After waxing, the cassava roots should be placed in a clean, strong, well-ventilated carton. If the cassava is not waxed, the surface of the root should be thoroughly dry prior to packing. Wet or damp roots will develop surface mould. Cassava is typically packed loose inside the carton. Wrapping alternate roots with soft paper may provide additional protection. Some importers in the U.K. prefer cassava packed in dry coconut fiber or sawdust, but due to phytosanitary reasons, this practice is not allowed for exports to the U.S. Net carton weights are typically 18.2 kg or 20.5 kg (40 lbs or 45 lbs) depending on the market and importer requirements. For marine shipments, an additional 5% packing

weight is needed to account for weight loss during transport. Cartons must not be overfilled during packing.

Principal Postharvest Diseases

Botryodiplodia Rot

This common fungus disease infects the root through growth cracks or wounds resulting from harvest. Infected roots may appear healthy externally, although the skin may be slightly wrinkled. The internal flesh tissue is discoloured and a fine white mould often develops on the wounded surface (Figure 5). If infected roots are stored for some weeks they shrivel and dry up. Decay can be reduced by low temperature storage or by applying a postharvest fungicide immediately after harvest.

Figure 5. Cassava roots infected with the fungus Botryodiplodia.

Fusarium Rot

This common soil-borne fungus causes dry rot of cassava. Infection may occur before or during harvest, typically via injuries. There is generally little external evidence of this disease, with the exception of white mould growth on the skin in humid environments (Figure 6). Internally, the flesh is brown in colour. The main means of control is to avoid harvest injuries and to use a postharvest fungicide.

Figure 6. White mould growth on surface of Fusarium-infected cassava root.

Phytophthora Rot

Poorly drained soils predispose cassava roots to this fungus disease. Rotting is rapid at temperatures between 20°C and 30°C (68°F to 86°F). Control of this disease begins in the field by providing adequate soil drainage to the roots. Care should be taken during harvesting and handling to minimize mechanical injury to the roots.

Rhizopus Rot

The fungus gains entry into the root through wounds sustained during harvest and handling. It may also enter the root through cracks that develop as the skin dries during storage. Control measures include minimizing harvest damage and preventing root dehydration during storage.

Bacterial Soft Rot

Bacterial soft rot is the principal postharvest bacterial disease of cassava. The pathogen enters the root through surface wounds, producing a soft wet, foul-smelling decay. Soft rot is more severe under warm moist conditions and poor ventilation. Proper sanitation of the wash water is essential to minimize the spread of bacterial soft rot during cleaning.

Postharvest Disorders

Vascular Discolouration

Vascular discolouration or streaking is the most common postharvest physiological disorder of cassava. It is thought to be caused by mechanical damage and tissue injury during harvesting and handling. Vascular discolouration is essentially a wound response that begins near the region of mechanical damage and continues to spread down the root. Symptoms typically appear as blue-black or brownish discolouration of the vascular tissue, referred to as vascular streaking or blue vein (Figure 7). These initial symptoms are followed by a more general discolouration of the starch bearing tissue. The rate of development and the intensity, pattern, and distribution of the discolouration varies between cultivars and roots. Some cultivars discolour so fast they become inedible 24 hours after harvest while others do not exhibit any sign of discolouration after 10 days at room temperature. The main way to reduce vascular discolouration is to minimize wounding and mechanical damage to the roots during harvest and handling.

Figure 7. Cross section of cassava roots showing distinct discolouration in the ring of vascular tissue.

ANNEX I

PUBLICATIONS IN THE POSTHARVEST HANDLING TECHNICAL BULLETIN SERIES

PH Bulletin No. 1	Pineapple: Postharvest Care and Market Preparation, November 2002.
PH Bulletin No. 2	Plantain: Postharvest Care and Market Preparation, June 2003.
PH Bulletin No. 3	Mango: Postharvest Care and Market Preparation, June 2003.
PH Bulletin No. 4	Bunch Covers for Improving Plantain and Banana Peel Quality, June 2003.
PH Bulletin No. 5	Papaya: Postharvest Care and Market Preparation, June 2003.
PH Bulletin No. 6	Watermelon: Postharvest Care and Market Preparation, October 2003.
PH Bulletin No. 7	Peppers: Postharvest Care and Market Preparation, October 2003.
PH Bulletin No. 8	Oranges: Postharvest Care and Market Preparation, October 2003.
PH Bulletin No. 9	Tomato: Postharvest Care and Market Preparation, October 2003.
PH Bulletin No. 10	Okra: Postharvest Care and Market Preparation, October 2003.
PH Bulletin No. 11	Pumpkin: Postharvest Care and Market Preparation, January 2004.
PH Bulletin No. 12	Lime: Postharvest Care and Market Preparation, January 2004.
PH Bulletin No. 13	Grapefruit: Postharvest Care and Market Preparation, January 2004.
PH Bulletin No. 14	Passion Fruit: Postharvest Care and Market Preparation, January 2004.
PH Bulletin No. 15	Green Onions: Postharvest Care and Market Preparation, January 2004.
PH Bulletin No. 16	Sweet Potato: Postharvest Care and Market Preparation, January 2004.
PH Bulletin No. 17	Eggplant (Boulanger): Postharvest Care and Market Preparation, January 2004.
PH Bulletin No. 18	Avocado (Pear): Postharvest Care and Market Preparation, January 2004.
PH Bulletin No. 19	Bitter Melon: Postharvest Care and Market Preparation, January 2004.
PH Bulletin No. 20	Bora: Postharvest Care and Market Preparation, April 2004.
PH Bulletin No. 21	Cassava: Postharvest Care and Market Preparation, April 2004.

PH Bulletin No. 22 Eddoes: Postharvest Care and Market Preparation, April 2004.

PH Bulletin No. 23 Ginger: Postharvest Care and Market Preparation, May 2004.

OTHER PLANNED PUBLICATIONS

Breadfruit: Postharvest Care and Market Preparation.

Cabbage: Postharvest Care and Market Preparation.

Calaloo: Postharvest Care and Market Preparation.

Coconut: Postharvest Care and Market Preparation.

Cucumber: Postharvest Care and Market Preparation.

Lemon: Postharvest Care and Market Preparation.

Starfruit: Postharvest Care and Market Preparation.

Tangerine: Postharvest Care and Market Preparation.

Yam: Postharvest Care and Market Preparation.

Harvest Maturity Indices

Root size is the principal measurement of harvest maturity for cassava. Cassava roots may be ready for harvest beginning 6 to 7 months after planting. Several randomly selected plants, typical of the entire field, should be harvested every several weeks, beginning about 6 months after planting, to determine the average root size and the correct time for harvest.

The age of the leaves and lower leaf yellowing can be a sign of harvest maturity. When the lower leaves are distinctly yellow and some have dried, it is likely the plants are mature enough for the roots to be harvested.

Harvest Methods

Harvesting cassava roots is usually done by hand and is easier when the soil is moist. The main stem of the plant should be cut back to a height of 30 cm to 50 cm (12 in to 20 in) and used as a handle to lift the roots out of the ground. In heavier soils or during the dry season, harvesting usually requires digging around the roots to free them prior to lifting the plant. While lifting, care should be taken not to break the roots or split the skin. Wounds and scratches are an entry point for decay. During the dry season, the upper parts of the cassava plant should be removed several weeks prior to harvest to allow for root curing and skin thickening while still in the ground.

After the roots have been pulled out of the ground, they are removed from the base of the plant by hand. Care must be taken during harvest to minimize damage to the roots. Harvesting the roots with a short section of the stem still attached may help prevent the spread of decay. Cassava should be graded in the field and any unmarketable, damaged, or diseased roots should be discarded. Loose soil should be removed from the root surface with cotton gloves at the time of harvest.

The cassava should be gently placed in strong well-ventilated field containers for transport from the field. Wooden crates or strong plastic containers are much better field containers than sacks or reed baskets, which provide minimal protection to the roots.

Curing

Roots intended for storage should be properly cured immediately after harvest. Curing improves potential market life by reducing water loss and lowering the incidence of decay during storage. Cassava that is not cured will deteriorate faster and lose more weight than properly cured roots. Curing is a process in which the skin thickens and new tissue forms beneath the surface in injured areas of the root. The injured tissue must heal quickly to avoid disease from entering the root. The curing process should begin as soon as possible after harvest. However, curing will not be effective on roots with a lot of damage. Cassava should never be washed prior to curing, as this will likely result in severe decay.

The optimal conditions for cassava curing are 26.5°C to 29.3°C (80°F to 85°F) and 90% to 95% relative humidity (RH) for 4 days immediately following harvest. The temperature should not exceed 35°C (95°F) nor should the RH be so high (i.e. 100%) that moisture occurs on surface of the roots.

Cassava can be cured outdoors if piled in a partially shaded area. Cut grasses or straw can be used as insulating materials and the pile should be covered with canvas, burlap or woven grass mats.

Cassava can also be cured inside a protected structure at ambient temperatures, provided the RH is high.

Temperature Control

Fresh cassava roots are highly perishable at normal air temperatures, often becoming unmarketable after several days to a week. However, with proper temperature control, cured roots can be stored for several months. The recommended temperature for maximizing cassava storage life is 2°C (36°F). Sound roots can be stored for up to 4 to 5 months at this temperature. Cassava is vulnerable to chilling injury (CI), and should not be stored below 2°C (36°F). Refrigerated storage may not be an affordable method for extending the postharvest life of domestically marketed cassava, but is typically necessary for roots intended for high-value export markets.

In the absence of temperature control, cassava market life can still be extended by using appropriate low-input storage structures. Above-ground clamp silos are low-cost structures that generally work well for cassava storage. Roots are piled up on a layer of straw in conical heaps weighing between 300 to 500 kg. The pile is covered with straw and soil and openings should be left for ventilation. It is possible to store cassava for up to 4 weeks without significant weight loss or decay.

Cassava should be stored at a high RH in order to minimize weight loss and root shriveling. Ideally, the storage atmosphere should be maintained between 90% to 95% RH.

Preparation for Market

Cleaning/Washing

The surface of the cassava should be cleaned to meet market expectations. For the domestic Guyanese market, excess soil should be removed from the cassava surface with a soft brush or cotton gloves. Cassava destined for export should be cleaned by carefully submerging the roots in a tank of clean water sanitized with 150 ppm hypochlorous acid (household bleach) and maintained at a pH of 6.5. This is equal to 2 oz of household bleach (such as Marvex) per 5 gallons of water, or .3 liters of bleach per 100 liters of water. The water in the tank should be replaced frequently as dirt and debris will quickly accumulate.

Grading/Sorting

Following cleaning, the roots should be graded according to size, shape, and amount of faults. Remove all cut, cracked, diseased and unattractive roots to make the package as attractive as possible. Good quality cassava should be smooth, firm, fairly straight, and even in shape and size. In addition, the roots should be free from damage, decay, and streaking. The pulp should be an even white or light yellow, depending on cultivar. Grades are based on freedom from defects, size, shape and uniformity. The National Bureau of Standards has established three different grade classes for domestically marketed cassava (Extra, Class 1, and Class 2) based on various root quality characteristics. Domestic marketed roots are also categorized according to size, based on weight per root: A (large) = 2.5 kg to 3.0 kg; B (medium) = 1.5 kg to 2.4 kg; C (small) = 0.5 kg to 1.4 kg. Export markets typically prefer large sized roots, between 15 cm to 25 cm in length (6 in to 10 in). Root lengths in excess of 30 cm (12 in) are undesirable in most export markets.

Waxing
Dipping the roots in melted paraffin wax at 51.5°C to 52.5°C (125°F to127°F) for one second adds a smooth thick surface coating to the root. This coating helps reduce root moisture loss and extends market life for up to 2 months. It also improves the external appearance of the root and reduces discolouration of the vascular tissue. A wax treatment is highly recommended for export market destined cassava roots. It is essential that the root surface be completely dry prior to the paraffin wax application. The roots are packed for export immediately after waxing. Waxing and holding at 0ºC to 5ºC (32°F to 41°F) can extend shipping time to over several months with minimal amounts of streaking.

Packaging
After waxing, the cassava roots should be placed in a clean, strong, well-ventilated carton. If the cassava is not waxed, the surface of the root should be thoroughly dry prior to packing. Wet or damp roots will develop surface mould. Cassava is typically packed loose inside the carton. Wrapping alternate roots with soft paper can provided additional protection. Net carton weights are typically 18.2 kg or 20.5 kg (40 lb or 45 lb) depending on the market and importer requirements.

Principal Postharvest Diseases

Cassava is vulnerable to a number of postharvest diseases. Decay can be kept to a minimum by using careful harvesting and handling practices to reduce root injury, prompt curing, and storage at 2°C (36°F) and 90% to 95% RH. The roots should be washed in properly sanitized water and applied with an appropriate postharvest fungicide prior to packing.

Botryodiplodia Rot

Infected roots may at first appear healthy on the outside, although the skin is usually slightly wrinkled. The internal flesh tissue becomes discoloured and a fine white mould often develops on the wounded surface. Infected roots stored for some weeks shrivel and dry up.

Rhizopus Soft Rot
Symptoms of Rhizopus soft rot include a soft, watery decay that rapidly progresses at ambient temperatures. Infected areas give off an off-coloured liquid when broken and produce a characteristic odour. A grayish-black whiskery fungal growth develops and covers the root surface.

Bacterial Soft Rot
Bacterial soft rot typically enters the root through surface wounds, producing a soft wet, foul-smelling decay. Eventually the entire root collapses into a viscous leaky mass of tissue. Sanitation of the wash water is essential to minimize the spread of bacterial soft rot during root cleaning.

Postharvest Disorders

Vascular Discolouration

Vascular discolouration or streaking is a common postharvest disorder of cassava, thought to be caused by damage and tissue injury during harvesting and handling. Vascular discolouration begins near the region of intial damage and continues to spread down the root. Symptoms typically appear as blue-black or brownish discolouration of the vascular tissue, referred to as vascular streaking or blue vein. These first signs are followed by a more general discolouration of the starch bearing tissue. The rate of development and the intensity, pattern, and distribution of the discolouration varies between cultivars and roots. Some cultivars discolour so fast they cannot be eaten 24 hours after harvest while others do not exhibit any sign of discolouration after 10 days at room temperature. The main way to reduce vascular discolouration is to minimize wounding and physical injuries to the roots.

Technical bulletins are also available on waxing fruits and vegetables, curing and hot bath treatment.
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With the assistance of
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New Guyana Marketing Corporation

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Postharvest Handling and Market Preparation Information Sheet

This information sheet provides growers and agriculture extension personnel with a summary of the recommended harvest and postharvest handling practices for cassava. A more technical and detailed bulletin is available from the New Guyana Marketing Corporation (NGMC) and the National Agricultural Research Institute (NARI).